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**Instructor’s Guide**

Leading a Development Team

December, 2012

The Software Engineering Institute  
Carnegie Mellon University  
Pittsburgh, Pennsylvania



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Introduction

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| In this section | This guide provides teaching suggestions and links to support materials for teaching the *Leading a Development Team*.  This section includes the following:   * instructor qualifications * course audience * text book used in course * course goals |

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| Instructor qualifications | This guide provides teaching suggestions and links to support materials for teaching the *Leading a Development Team*.  This guide is written to be a reference for SEI-Authorized PSP Instructors. SEI-Authorized PSP Instructors are required to successfully complete the *PSP Fundamentals* course, the *PSP Advanced* course, and the *PSP Instructor Training* course. Therefore, it is assumed that the instructor is already very knowledgeable about PSP and TSP practices.  While it is highly recommended that the instructor take the course, *Leading a Development Team,* before instructing the course, doing so is not a prerequisite for teaching the course.  The suggestions in this guide are based on the experiences of instructors at the Carnegie Mellon[[1]](#footnote-1)® Software Engineering Institute (SEI) and of many other experienced instructors who have taught the PSP and TSP courses to thousands of attendees. |

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| Course audience | The primary audience for the course is team leaders of TSP teams. Team leaders are assigned to a TSP by their organization. In some cases team leaders are first-line managers that have management responsibilities with respect to the team. In other cases, the team leader is not part of the management staff, but is designated as team leader.  The secondary audience for the course includes managers that have an interest in the results delivered by a TSP team. These could be middle managers—individuals that a TSP team reports to. It could also include managers that have responsibility for groups that interface with a TSP team (e.g., testing managers, quality assurance managers, etc.). |

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| Text book used in course | The text book, *TSP:* *Leading a Development Team,* W. Humphrey, ISBN 0321349628, is distributed to individuals that have registered to the course. A significant amount of the course content is based on this book. |

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| Course goal | The over-arching goal of this course is to prepare team leaders to effectively lead TSP teams.  As a result of the course, attendees should be able to describe   * what the TSP is * how the TSP will help their organization * what they need to do to be successful as TSP team leaders * the dynamics and complexities of self-managed teams * what the elements of a process are * their responsibilities as team leaders * how to establish and maintain process discipline * how to manage the TSP plan * how to manage quality * how to establish and maintain high standards * how to communicate effectively with management * how to handle difficult people and situations within a TSP context * how to work effectively with the TSP coach * how to work with role managers |

Course Overview

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| Course organization | The course is organized into modules with each module addressing a specific set of topics.  Modules are composed of lectures and/or exercises.  *Lectures* provide the instructor the opportunity to describe PSP/TSP concepts, facilitate discussions, and answer attendee’s questions. An important part of the classroom lectures is reinforcing the materials through discussion and interaction. While the materials in the lectures are covered in the textbook, not all attendees complete the textbook reading assignments.  *Exercises* provide attendees the opportunity to practice skills that they will need in leading TSP teams. Exercises also provide the instructor an opportunity to access whether attendees are learning the course content. It is especially important that the instructor be well prepared for exercises. The course exercises depend heavily on the instructor’s ability to focus attendee attention and effort to meeting the exercise objectives. |

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| Course agenda | The three-day course agenda is included as Appendix A on page 59. |

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| Module topics | Table 1 lists the course modules and the topics treated within each module. A summary of each module is presented after the table.  Appendix B, on page 62, provides a summary of the events (class interactions, exercises, and videos) that are part of the course.  The section titled, *The Course Modules in Detail,* on page 18 describes each module in detail. |

Table 1. Course Modules, Number of Slides, and Module Topics.

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| --- | --- | --- | --- |
| Mod. # | Module | Number of slides | Topics |
| 0 | Introduction | 11 | * Introductions * Logistics and guidelines * Agenda review |
| 1 | Team Leader Role | 19 | * The team leader’s challenge * Knowledge work * Leadership * Motivating teams |

*Table continues on next page*

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| Module topics, cont. | Table continued from the previous page. |

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| Mod. # | Module | # slides | Topics |
| 2 | TSP Overview | 41 | * Self-managed teams * Defined process framework * Team-based project planning process guided by a coach * Metrics for tracking project status and product quality * TSP measurable benefits |
| 3 | Team Launch | 31 | * TSP launch overview * Roles & responsibilities of team leader and coach |
| 4 | Process Discipline | 50 | * Process basics * The importance of process discipline * Rogue pilot exercise |
| 5 | Leading the Team | 18 | * Managing knowledge work * Developing team members |
| 6 | Managing the Plan | 44 | * Using the earned value method to manage the project * Determining project status * Maintaining team commitment |
| 7 | Managing Quality | 85 | * Defining quality * The cost of quality * Defect removal techniques * TSP quality measures * Planning for high quality * Assessing quality during the project * Are defects escaping from your process? * What you can do as team leader |
| 8 | Reporting to Management | 35 | * The management role * Status reporting guidelines * Are you the manager of a TSP team? |
| 9 | Getting Better At It | 16 | * Checkpoint review * Cycle and project postmortem * Process improvement proposals (PIPs) |
| 10 | Capstone Exercise | - | * Eight-part culminating exercise |
| 11 | Conclusion | 7 | * Course conclusion and evaluation |

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| Introduction:  Module 0 summary | Module 0, *Introduction*, is brief. Introductions are conducted. Logistics and ground rules are discussed, followed by a review of the three-day agenda. |

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| Team Leader:  Module 1 summary | The purpose of Module 1, *Team Leader*, is to describe the role of the team leader and to describe why the self-managed team is a successful model. This module sets the context for the rest of the course by describing the team leader’s role as possessing three major responsibilities.   * Delivering a successful project * Communicating effectively with management * Demonstrating leadership   The module also describes the key characteristics of self-managed team.   * A sense of membership and belonging * Commitment to a common goal * A belief in the process to meet the goal * Skills and discipline to do the job * Willingness to take responsibility and ownership of the plan |

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| TSP Overview: Module 2 summary | Module 2, *TSP Overview*, describes how TSP teams work and how they are different from traditional teams. The lecture describes the major characteristics of the TSP.   * Process and measurement framework * Process structure * Cyclic development * Team roles * Planning and team building * Tracking and status reporting * Team management   The module also describes measurable TSP results based on historical data and explains what it takes to achieve those results. Team member training is essential. |

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| Team Launch: Module 3 summary | Module 3, *Team Launch*, describes the TSP launch process. The module describes   * what occurs during each meeting of the launch * the team leader’s role during the launch * how the team leader can take advantage of the coach’s skill and experience   At the end of the module, the instructor leads a *guided tour* through a TSP Plan. During this interactive event, the instructor steps the attendees through the different parts of a TSP plan to orient them to the type of information that is included in the plan. |

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| Process Discipline: Module 4 summary | Module 4, *Process Discipline*, begins with a section that covers *process basics*, both in the generic sense and then within the TSP context. The TSP process and measurement framework is described. The section on process basics finishes by emphasizing the value of defined processes.  Having established a shared understanding of what we mean by the term process (in TSP), the next section discusses the importance of establishing and maintaining *process discipline*. This section begins with a definition of process discipline and why it is essential that teams maintain process discipline.  The next section then describes strategies that the team leader can apply to establish process discipline, including suggestions for addressing team member resistance.  The module ends with a case study of a rogue pilot to illustrate how a seemingly minor lack of process discipline can lead to devastating results. The instructor sets-up the case study and attendees read the case study as evening homework. The case study is then debriefed to begin the second day of the course. |

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| Leading the Team: Module 5 summary | Module 5, *Leading the Team,* follows naturally after the *Process Discipline* module. The module focuses on leadership—a key quality of the team leader that can ward off problems associated with process discipline.  The module begins with the challenges associated with managing knowledge workers. Becoming a high-performance team is a journey that is accelerated by TSP. However, in some cases, one or more than one team member can take a “side-trip” which can slow down the team on its path to high performance. This module provides guidance for how a team leader can assess their team based on team member behaviors. Based on the assessment of key team performance characteristics, activities are suggested to reinforce positive behaviors and to correct negative behaviors.  The last section of the module addresses an important responsibility of the team leader: developing team members. The proper use of individual performance data is highlighted. Finally, specific advice is offered for addressing “rogue” team member behaviors. |

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| Managing the Plan: Module 6 summary | Module 6, *Managing the Plan,* addresses the team leader responsibility of ongoing project management using the team-generated data. The dynamic nature of a project is emphasized as is the need to understand project status on a daily basis.  The second section steps through the TSP schedule status indicators. Examples are provided during this interactive session. At the end of this session, the *Managing the Plan* exercise is introduced. The class breaks out into work groups for this exercise.  The final section of the module addresses actions that the team leader can take to promote ownership of the plan by the team. |

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| Managing Quality:  Module 7 summary | Module 7, *Managing Quality,* is the longest module in the course. The module is chunked into eight sections. A brief introduction highlights various examples that demonstrate why quality is important. Then, the class breaks into groups for an exercise that challenges individuals to think about how quality is defined for the products and services that they develop in their work environment. The exercise is followed by two modules that discuss concepts and definitions of quality including the cost of quality.  The third section focuses on defect removal techniques, especially personal reviews and inspections. Effective review principles and practices are described. The for multiple product review phases is emphasized so that high quality can be achieved. This section finishes with a 15-minute group exercise that challenges attendees to examine quality problems that they’ve experienced in the past.  The fourth section steps through the TSP quality measures.  The fifth and sixth sections emphasize that quality must be *planned* into the product and illustrates ways that product quality can be assessed during the project.  The seventh section highlights the capture-recapture method for estimating defects that have escaped from the process. An instructor-led exercise simulating an inspection and using the capture-recapture method completes this section.  The eighth and final module addresses what the team leader can do to promote a proper attitude towards quality. An exercise, *Setting Quality Goals,* completes the module. |

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| Reporting to Management Module 8 summary | Module 8, *Reporting to Management,* addresses the need for effective communication with upper management. In the first section of the module, recommendations are provided regarding what to present as part of a status report. Additional guidance is suggested for *how* to present project status.  The second section of the course is targeted for managers that are report *to* by TSP teams. This section emphasizes ways that management can help a TSP team become successful. |

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| Getting Better At It Module 9 summary | Module 9, *Getting Better At It,* describes   * the checkpoint review * cycle and project postmortems * process improvement proposals (PIPs) |

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| Capstone Exercise Module 11 summary | Module 11 is the *Capstone Exercise*. This is an eight-part exercise that presents the attendees with some situations that they may encounter as TSP team leaders. The class breaks out into groups. The instructor introduces a part of the exercise. The groups then work on that part of the exercise before rejoining for a discussion that is facilitated by the instructor. |

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| Conclusion Module 12 summary | Module 12, *Conclusion,* reviews additional resources for learning more about the TSP. Course evaluations are completed by the attendees. |

Course Administration and Classroom Management

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| Introduction | This section addresses the activities that occur before, during, and after the course. |

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| In this section | This table lists the topics covered in this section. |

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| --- | --- |
| **Topic** | **See page** |
| Before the course | 10 |
| During the course | 13 |
| After the course | 17 |

Before the Course

Course Administration and Classroom Management

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| Introduction | Preparation is key to conducting a successful course experience—for both the attendees and the instructor. Preparation involves handling the administrative activities to set up the course. It also includes study and review by the instructor so that the course topics are delivered in a professional and effective manner. |

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| The course materials | The course materials include not only the instructional materials but also documents that are intended to help you prepare for the course delivery.  The course materials are included as a set of folders. When you download the materials from the Partner Resource Center, the top-level folder should be labeled, *Leading a Development Team 2012.12.* Appendix C on page 65 includes a table that illustrates the structure and organization of this folder. |

Table 2. Folders and Content Description for Course Materials.

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| Subfolder | Content description |
| Collateral | Contains documents for organizing the delivery of a course. |
| Course Notebook | The course materials including table of contents and agenda, presentation slides, exercises, and notebook packaging templates. |
| Handouts | Solutions to five of the exercises. |
| Instructor Materials | Instructor guide (this document). |

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| The *Collateral* folder | Table 3 lists and describes the documents that are located in the *Collateral* folder. The purpose of these documents is to provide assistance and support for organizing the delivery of the course. |

Table 3. Collateral Folder Contents.

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| Document | Description |
| TL Course Checklist.docx | A task list for organizing a course delivery |
| TL Facilities Specification.docx | Describes the recommended classroom set-up |
| TL Notebook & Handout Instructions.docx | Instructions for organizing the attendee notebook prior to distribution |
| TL Precourse Letter.docx | A template letter for communicating with registered attendees |
| TL Supply List.docx | A list of supplies |

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| Videos used during the course | The videos used in this course are downloaded from the Partner Resource Center. The zip file that includes the videos is listed as a separate download from the other course materials. |

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| Course capacity | Course registration should not exceed 25 attendees. There are two reasons for establishing this limit.   * The need to provide an adequate amount of time for participating in, and debriefing group exercises. * Too large a class makes it difficult for all participants to comment, ask questions, and to interact during lectures.   The instructor may prefer to limit course registration to a size lower than 25 registrants. For example, if the instructor is inexperienced, they may prefer a smaller class to manage. Also, the available classroom size itself may dictate that registration is limited to the size that the classroom can accommodate.  Note: It is important to decide about the registration limit early so that an appropriately-sized classroom can be reserved. |

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| Communicating with registrants | Please send the registrants their pre-course package with plenty of advance time before the course delivery. In that way, they will have adequate time to plan and to prepare for their course experience.  In the pre-course letter, attendees are encouraged to read the textbook before the course delivery. Therefore, please send these materials to them as soon as possible. |

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| Assembling the course materials | Allot yourself plenty of time to assemble the materials. Assembly instructions are included in the *Collateral* folder. |

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| Instructor preparation | All instructors, including seasoned instructors, should carefully review the course materials before delivery. This includes the instructor’s guide, the course presentation materials, the exercises, and the exercise solutions.  As you review the slides, consider what your talking points will be for each slide. (You certainly want to avoid just reading the slide material.) |

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| First-time instructor? | If you are a first-time instructor, then you will want to spend a considerable amount of time preparing for the course. Doing so will help ensure that your course delivery experience is successful and enjoyable—not only for the attendees, but also for you, the instructor.  The preparation recommendations for first-time instructors follow.   * Study the instructor’s guide. * Carefully review the course presentation materials. Think about your talking points and how you will deliver the material using your own examples. Also consider how you will compare and relate content from different parts of the course. * Work through all of the exercises presented in the course. Compare your solutions to the exercise answers provided in the handouts. Consider how you will debrief the exercises during the course. * Review the videos that are used in the course. * Review the book, *Leading a Development Team,* by Watts Humphrey. Consider reviewing other TSP books if you feel that a *refresher* would help you with elaborating various topics. * Facilitation is a key skill needed during the course. If group facilitation is new to you, review source materials on this topic. |

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| Preparing the classroom | As the course instructor, you are ultimately responsible for the learning environment.  On the day before the course begins, prepare the classroom for the arrival of the attendees the next morning.   * Ensure that the tables are arranged optimally. Every attendee must have a clear view of the projection screen. * The course materials should be neatly set out for each of the attendees. Place markers at each table if the attendee will write their name on a blank tent card. * Check the classroom lights. You should know how to adjust them if needed. * Check the computer and projection equipment to ensure proper working order. * Review the safety procedures for the building. Know where the fire exits are located. * Know where the restroom facilities are. * Are there special security regulations? If so, make sure you are familiar with them so that you can communicate any issues to the attendees the next day.   You also need to consider what you need to do if there are problems. For example, what would you do if a projection bulb burns out? Who can help you with computer-projector connection issues? |

During the Course

Course Administration and Classroom Management

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| Introduction | This section addresses some issues associated with classroom management and facilitation during delivery of the course. |

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| Instructor behaviors | It is essential to maintain a friendly and professional presence in the classroom at all times.  Strive to model the behaviors that you would like to see with the attendees. For example, being prepared, punctual, and organized are traits that you want to demonstrate during the course. |

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| On the first day | On the first day of the course, please arrive sufficiently early before the course begins to ensure that everything is set up and ready to go. This will help to get the course off to a good start.  Be in the classroom early to greet the attendees as they arrive. Introduce yourself and welcome them to the course. |

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| Presenting the course slides | If you have prepared adequately before the course, you will be ready with your talking points for each slide as it is presented. Please cover the content of the slide but do *not* simply read the slide itself. Paraphrase the slide and augment it with your own story, when appropriate. However, be careful about timing and do not spend too much time on any one slide. |



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| Interactions & discussions | An important way of keeping the attendees involved during the course presentations is to frequently engage them with interactions and discussion.  There are a significant number of planned interactions that have been planted throughout the material. Many of these are highlighted in the presentation materials with a unique slide type that serves as a visual cue for setting up an interaction with the attendees. Here is an example of an interaction slide.    When presenting the slide, ask the attendees to think about the question and to jot down their response(s). Then, after a few minutes, collect responses from volunteers as you transcribe them onto a flipchart. Post the flipchart sheet on the wall as they accumulate during the course.  Note: Don’t forget that you must also manage the time during the course. In some cases, you may have to limit the amount of time for an interaction by simply entertaining several responses before moving onward through the course material. |

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| Exercises | There are two kinds of exercises presented in the course.   1. Exercise is presented within a PowerPoint slide. 2. Exercise is presented and guided by a multi-page supplement that is inserted in the course notebook. There are four of these exercises in the course:  * Initial Weekly Meeting (Module 4, Process Discipline) * The Rogue Pilot (Module 4, Process Discipline * Managing the Plan (Module 6, Managing the Plan) * Capture-Recapture (Module 7, Managing Quality) * Managing Quality (Module 7, Managing Quality) * Reporting to Management (Module 8, Reporting to Management) * Capstone (Module 10, Capstone)   Each of the exercises listed under #2, have proposed solutions (located in the *Handouts* folder) that are distributed to the attendees after they complete the exercise. Exceptions include *The Rogue Pilot* exercise and the *Capture-Recapture* exercise. These two exercises do not have proposed solutions.  Appendix B on page 62 lists and summarizes the exercises and indicates their location within the module. Also, the section, *The Course Modules in Detail,* that begins on page 18 provides details about the exercises. |
| Videos | There are a number of videos that are shown during the course. A discussion follows each of the videos.  Note: Before showing a video, open the file and set them up on your computer screen so that you do not need to search for the file, arrange the window settings, etc., during class time. Having the video ready to go will permit a smooth transition into that part of the course. |

Table 4. Videos displayed during the course.

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| --- | --- |
| Video Filename | When used |
| TSP Weekly Meeting.m4v | Module 2, *TSP Overview* (see slide 3). |
| TSP Launch - Meeting 9.m4v | Module 3, *TSP Launch* (see slide 3). |
| B-52 Crash at Fairchild.m4v | After Module 4, *Process Discipline*.  The video is shown in the morning after the class has completed their evening reading assignment (The Rogue Pilot).  This video is shown *before* the class discussion of the exercise. |
| Aftermath – B52 Crash [10-2012].m4v | This video is shown following the discussion/debrief of *The Rogue Pilot* exercise. |

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| Addressing disruptive behaviors | Classroom management and facilitation skills are critical to maintaining an effective learning environment for the attendees. In some cases, classroom learning is disrupted by behaviors that can be distracting to some and annoying for others.  Setting ground rules at the beginning of the course is one of the best methods of classroom management. This is indeed the purpose of slides 3-4 of the *Introduction* module (i.e., the *Logistics and Guidelines”* slides). Consider placing those slides on the wall or copying those items that represent norms to a flip chart and label the list as “Ground Rules.” Refer to the list when disruptions occur.  Using a clip chart or white board can be especially useful because you can involve the attendees in the construction of the list on the first day and in that way obtain buy-in. Start with a few of your own expectations and ask the class for additional suggestions. When you all agree on how you want the classroom to be managed, disruptions are minimal. |

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| Keeping on track | It's always a good idea to address questions of any kind when they occur because curiosity provides fabulous teaching moments, but sometimes it just isn't appropriate to get off track.  Many instructors use a flip chart or white board as a holding place for such questions to ensure they're not forgotten. Call it the parking lot. Be creative. When a question being held is eventually answered, mark it off the list. | C:\Users\mkasunic\Desktop\iStock_000014176439XSmall.jpg |

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| Managing mild disruptions | Unless you've got a completely obnoxious attendee in your classroom, chances are good that disruptions, when they do occur, will be fairly mild, calling for mild management. We're talking about disruptions like chatting in the back of the room, texting, or someone who is argumentative or disrespectful.  Try one, or more, if necessary, of the following tactics:   * Make eye contact with the disruptive person * Remind the group of the agreed-upon norms * Move toward the disruptive person * Stand directly in front of the person * Be silent and wait for the disruption to end * Acknowledge the input, put it in your "parking lot,”, and move on   + "You may be right."   + "Thanks for your comment."   + "How about if we park that comment and come back to it later." * Ask for help from the group (e.g., “What dos everyone else think?”) * Rearrange the seating if you think it will help * Call for a break |

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| Handling persistent disruptions | For more serious problems, or if the disruption persists:   * Speak with the person privately * Confront the behavior, not the person * Speak for yourself only, not the class * Seek to understand the reason for the disruption * Ask the person to recommend a solution * Review your expectations of classroom behavior if necessary * Try to get agreement on expected norms * Explain any consequences of continued disruptions   While you will likely never encounter persistent disruptions, it is always good to have a game-plan in mind should you encounter such a situation. | \\ad\dfs\Users\mkasunic\Documents\iStock\iStock_000017030053XSmall.jpg |

After the Course

Course Administration and Classroom Management

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| Course evaluation | Ensure that all attendees complete the SEI course evaluation form. |

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| Continuing Education Units (CEUs) | If an attendee has successfully completed the course, they are entitled to continuing education units. Ensure that any attendee who desires to claim the CEUs, completes the *course certificate sheet.* |

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| Send to the SEI | Send the completed certificate sign-in sheets and all course evaluation forms to the SEI. |

Overview: The Course Modules in Detail

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| Introduction | This section describes the details of each module. |

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| Conventions | Graphic icons are used in this section to point out locations where an exercise, video, or a slide build (a.k.a., animation) occurs. |

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| Icon | Indicates |
| C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpg | Exercise introduced by a slide. |
|  | A slide build (animation). |
| C:\Users\mkasunic\Desktop\Video icon.jpg | A video introduced by a slide. |

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| Course  supplements | Some modules include supplementary documents that are referred to during the module. These documents are included in the attendees’ notebooks at the end of the module.  You can open an on-screen version of the document by clicking on a hyperlink that is provided on the slide where the supplement is being discussed. |

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| In this section | This table lists the modules described with detail in this section. |

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| Mod. # | Module | See page |
| 0 | Introduction | 20 |
| 1 | Team Leader Role | 22 |
| 2 | TSP Overview | 24 |
| 3 | Team Launch | 29 |
| 4 | Process Discipline | 34 |
| 5 | Leading the Team | 38 |
| 6 | Managing the Plan | 39 |
| 7 | Managing Quality | 44 |
| 8 | Reporting to Management | 53 |
| 9 | Getting Better At It | 55 |
| 10 | Capstone Exercise | 57 |
| 11 | Conclusion | 58 |

Introduction  
Module 0

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| Instructor introduction(s) | The module begins with a welcoming of the attendees as the instructor(s) introduce themselves. Each instructor provides background about their work experience and how they became involved with the PSP and TSP. Consider sharing how the PSP and TSP has helped you and/or your company (e.g., increased productivity, high-quality products, reduced costs, etc.). |

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| Attendee introductions | The instructor then invites introductions from each of the attendees. The attendee can offer:   * their name * organization or project * their role in the organization or project * their expectation(s) for the course   The expectations are recorded on a flip chart. If any of the expectations are not addressed by the course objectives, inform the attendee and offer to talk with them about the topic during a break or over lunch. |

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| Logistics and guidelines | Slides 3-4 cover a mixture of logistics and behavior expectations or norms. Emphasize that the guidelines are in place to promote an effective learning space by avoiding distractions. (See the discussion in the section titled, *Addressing disruptive behaviors,* on page 15 of this document. |

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| Issues Discussion | Slide 5, *Issues Discussion,* is intended to spark a discussion about the problems that attendees (or their customers) have had with developing or using their software products.  This slide prompts the attendees to take a few minutes to list the problems that they or their customers have experienced when developing or using their software products.  The instructor then solicits responses from the class and transcribes them to a flipchart. Typical responses include problems about requirements, schedule issues, and cost overruns. Quite often, the attendees begin to see a pattern in the responses and the linkage to quality problems.  Note: The instructor does *not* respond to the issues that are raised. The posted list of issues is can be referred to throughout the course when appropriate. The point (at that time) that you may want to make is how some aspect of TSP addresses one or more of the problems that were listed here. |

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| Agenda review | The module ends with a review of the three-day course agenda.  Wrap up the module by inviting questions about anything that was covered in the module. |

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| Hyperlinks provided on agenda slides | Hyperlinks are embedded in the agenda slides and can be used to access an on-screen version of a module presentation or exercise guidance document.  When you are in *slide show* mode of PowerPoint, point anywhere to the right of an agenda item and click to open up the document associated with that agenda item.    If the hyperlinks become broken for some reason, you can always access the file by navigating to the appropriate location within the folder structure. Appendix C on page 65 illustrates the course folder structure. |

Team Leader Role  
Module 1

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| Topic summary | The topics covered in this module include:   * The team leader’s challenge * Knowledge work * Leadership * Motivating teams |

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| Slides 3-4 | The module begins with two interaction slides that raise the following questions for the attendees to respond to:   1. What does management expect from you? 2. What do team members expect from you?   The objective of this interaction is to highlight the expectations of these two stakeholder groups (i.e., management and team members) with regard to the *team lead* role that the attendee has been asked to assume in their organization.  Write the class responses on flip chart paper and post. |

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| Slides 5-6 | Slides 5-6 emphasize that the team leader’s challenge is to meet the expectations of both management and the team.  The team leader can satisfy both sets of expectations if an inspired and enthusiastic team can be formed and sustained to energetically accomplish the work to meet management’s expectations. |

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| Slides 7 | Great Teams.  This slide challenges attendees to think of the better teams that they have been a part of in the past and to identify the characteristics that set those teams apart from others.  The instructor lists these characteristics on flip chart paper. |

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| Slides 9-11 | The term, *knowledge work,* is introduced and described. Managing knowledge work is described as challenging because the intended product of the effort is complex and abstract—making effective communication difficult at times. The nature of knowledge work requires unique skills and cooperation between management and the knowledge workers to achieve the desired result.  This leads to the principle (on slide 10) that knowledge workers must be trusted to manage themselves, because they are the ones that can manage their work most effectively. Therefore, knowledge workers must learn and practice how to manage themselves—and, that is exactly what the TSP enables.  Slide 11 emphasizes that when individuals are trained in the PSP and follow the TSP, they become a *self-managed team.* |

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| Slide 12 | Leadership Discussion.  With this slide, attendees are asked to consider an individual that they have known who demonstrated admirable leadership traits. What were the characteristics of that individual that made the attendee hold this person in esteem? Write down the attributes that the attendees offer on flip chart paper and post. |

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| Slide 13-16 | The preceding class discussion leads nicely into these slides that discuss leadership styles. One way that leaders lead is by motivating their followers. There are both functional and dysfunctional ways to motivate people. There is motivation by (a) fear, (b) the promise of a reward, and (c) trust.  This is a good opportunity for an interaction with the class by posing the question, “In your experience, what are the characteristics of teams motivated by each of these approaches.”  Leadership styles (transactional vs. transformational) are contrasted on slide 14.  Slides 15-16 emphasizes that personal commitment, supported by team members is truly motivating because it builds a sense of mutual trust among team members. |

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| Slide 17 | The module comes to an end with slide 17 that addresses what the team leader can do to sustain the momentum and motivation within the team: (a) making commitments visible and (b) providing ongoing feedback to the team. |

TSP Overview  
Module 2

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| Slide 2 | The module begins with an introductory slide, “What is the Team Software Process?” that sets the stage for the remainder of the module.  The presentation that accompanies this slide is referred to as an *elevator speech*, since the purpose is to describe the TSP in the amount of time you might spend with someone on an elevator.  The first point is that the TSP provides *actual practices* for developing software. It is not a model or theory; it is composed of specific guidance for teams.  The next point is that TSP was developed to address common software engineering challenges. If these challenges are issues that were brought up during the Introduction lecture, refer to those by pointing them out (on the flipchart from the Introduction lecture).  This leads to the upcoming video which illustrates how a TSP operates during a weekly status meeting. |

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| C:\Users\mkasunic\Desktop\Video icon.jpgSlide 3 | Slide 3 introduces the video that provides a *peek* into a TSP meeting.  Note: The instructor should have set up the video previously so that they can seamlessly transition to it (rather than fumble with locating it and setting up the window for it on the laptop).  Set up the video situation with a short overview.   * The team is composed of four team members, a team leader and a TSP coach. * The team developed their plan and started work seven weeks ago. * The team is meeting weekly to discuss the status against their plan and to manage the quality of their product. |

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| Slides 4-5 | Slides 4-5 are used to debrief the video. Attendees are asked to compare and contrast what they have just seen (in the video) to the practices in their organization. Slide 5 then summarizes the key aspects of how a TSP team operates before moving into the next section of the module. |

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| Slide 6 | The *topics* slide for this module is organized by the various characteristics of a TSP team. Each of the characteristics that are listed on this slide will be highlighted with several, or slightly more, slides.  The topics are:   * establishes self-managed teams * is guided by a defined process framework * provides a team-based project planning process guided by a coach * includes metrics for tracking project status and product quality * provides immediate, measurable benefits |

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| Slides 7-10 | Slide 7 introduces the *self-managed team* model and contrasts it to the traditional work group model.  *Self-managed* implies that the team is responsible for its own plan, status, and quality.  This leads to a discussion of the TSP roles on slide 8. Point out that *defined* roles for some aspect of team management promotes a sense of belonging for team members. Roles also ensure that essential management tasks will be addressed. Many of these management tasks are coordination tasks that will free up the team leader to *lead*. Point out to the class that the roles are not time consuming. After an initial learning curve, most team members will spend approximately one to two hours per week on their role responsibilities.  Slides 9-10 highlight the Team Leader’s role. The *TSP Team Leader Role Specification* is in the course notebook immediately after the module slides and can be accessed by the link at the bottom of the slide 9. Have the attendees take a minute to read through the team leader role specification.  A key point that you want to get across to the attendees is that the TSP team leader role is different from what might be considered the traditional role of a group leader.  Slide 10 addresses the case where the team leader is also a developer on the team. Slide 10 also and provides some cautions for these types of situations. While it is generally best for the team leader to devote all of his or her energy and time to leading and guiding the team, it is sometimes appropriate for the team leader to handle some development work, particularly on small teams. However, in such situations, it is important to consider the following points.   * The team leader’s priority should be guiding and leading the team—not performing the development work. * When the team leader performs team-member tasks, then the leader is more likely to become enmeshed in the details of *doing* the work —not *leading* the work. * When the team is under pressure, a developer-leader is more likely to just try harder, instead of thinking of strategic ways to address the situation in creative ways. |

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| Slides 7-10, cont. | Before a team leader acquiesces to a developer-lead role, they should consider these suggestions:   * If there are multiple small teams having the same issue (that is, they are too small to have a full-time team lead) then   + group several small team together   + the team leaders (of the former small teams) become technical leads   + making the common team manager the overall team leader * If the rationale for the developer-lead role is that the team leader has some unique knowledge or skill that is crucial for project implementation, then   + identify a team member(s) that could be mentored into the specialized knowledge or skill   + assign them to assist the team leader with work in that area   + provide guidance, mentoring and coaching until they can take on their new responsibilities |

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| Slides 12-13 | Slides 12 and 13 describe the TSP process and measurement framework.  Some attendees will have a negative impression of *process*. They may imagine some huge document that results in a lot of overhead to the team while providing little benefit. Describe to the class that TSP process descriptions are not like this at all. They are typically one- or two-page guidance documents that help ensure that the process is conducted consistently. They are not set in stone, but can be tailored to the needs of the team.  Slide 13 includes a snippet of a process script to illustrate how easy they are to follow and use. |

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| Slides 16-22 | This set of slides describes how TSP provides a team-based project planning process that is guided by a coach.  Slide 15 describes the TSP launch at a high level emphasizing that it must be considered *part* of the work itself (and not an overhead activity). The major inputs and outputs of the launch are emphasized.  Slide 16 then illustrates that there is a lot of flexibility with respect to TSP introduction within an already existing project. Also emphasize that TSP can be used with *any* type of development methodology.  Slides 17 and 18 illustrate the multiple levels of TSP planning. The TSP planning strategy is to break down the work into multiple increments or cycles. As illustrated on slide 17, each cycle begins with a launch (or re-launch) and ends with a postmortem. Briefly describe what a postmortem is and the benefits that a postmortem provides for estimating project parameters in the future.  Note: Slide 17 and slide 18 are both *build* slides so that the information can be delivered in easy-to-process chunks Before the course begins, please practice these animations so that they are conducted smoothly. |

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| Slides 16-22, cont. | Note that with slide 18, alternative terminology is acknowledged for “cycle.” Standard terminology does not really exist in the software development world. Ask the attendees whether they refer to the term, cycle, with some other term. Write down the various terms offered by attendees on a flipchart.  Slide 19 introduces the launch process (nine meetings and a postmortem). There is no need to dwell on the slide since it is covered in detail later. Review the chart at a high-level.  Note the postmortem at the end of the launch process (on slide 19) and inform the attendees that this postmortem is different than the cycle postmortem that was just discussed. *This* postmortem consolidates lessons learned from the launch process itself so that future launches can be improved.  Point out to the class that a launch is guided by a TSP coach. Some attendees may question why the TSP requires a coach. Moving to slide 20, the instructor facilitates a brief class discussion about what the role of a coach is—in general terms. Responses are recorded on the flip chart.  Slides 21 and 22 elaborate the role and activities of the TSP coach. |

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| Slides 23-29 | Slides 23-29 address the TSP metrics for tracking project status and quality.  Describe the project tracking process and the data that is collected to support teams in understanding their schedule and quality status.  Slide 24 emphasizes the point that self-managed teams are responsible for tracking their status against their plan. There is the perception with many individuals that tracking data is cumbersome and time-consuming. Therefore, you want to emphasize that the tracking process requires *only* four measures to be collected and the overhead required is minimal.  The four measures are described on slides 25 through 28. Describe each measure and how the data is collected. Allude to the forms and the available support tools that the developers are using while they conduct their work.  Slide 29 summarizes this section by illustrating the informational benefits derived from when these four base measures are collected and tracked. |

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| Slides 30-37 | Slides 30-37 emphasize that TSP provides immediate, measurable results.  Slides 31-34 illustrate data-based results for teams that use TSP. Step through each of the charts summarizing the key results.  Slide 32 summarizes the results from an SEI Report showing how schedule and effort deviations were drastically reduced when an organization adopted the TSP.  Slides 33 and 34 are results published by Capers Jones illustrating how TSP stacks up against other methodologies when comparing product quality results. The original data for this chart was reported in function points (and not in KLOC). For these charts, function points were converted into lines of code (LOC) using 100 LOC per function point which is recommended by Jones for non-procedural languages.  Slide 37 summarizes some of the actual quotations made during recent TSP symposia that illustrates an additional, less tangible dimension of how TSP benefits its users—improved quality of work life.  Having made the point that TSP leads to outstanding performance, slides 36-37 make the point that these results can only be attained if there is commitment to learning and following the TSP process. (That is, using *some* practices of TSP but not others, may help your team perform better, but you will not necessarily obtain the breakthrough results unless the team becomes dedicated to TSP practices with a commitment to continuously strive to do better.) Building on the last point of slide 36, slide 37 emphasizes the importance of PSP and TSP team member training for all individuals on the team. |

Team Launch  
Module 3

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| Topic summary | The topics covered in this module include:   * TSP launch overview * Roles and responsibility of the team leader and the coach * Motivating teams |

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| C:\Users\mkasunic\Desktop\Video icon.jpgSlide 3 | Module 2, *Team Launch* opens with slide 3 which introduces a video that provides a *peek* into meeting 9 of the team launch.  Note: The instructor should set up the video at the beginning of the day so that they can seamlessly transition to it (rather than fumble with locating it and setting up the window for projection on the laptop).  The purpose of this video is to *show* the attendees how TSP teams negotiate their plan with management. The video shows a committed team that has worked out a plan with several alternatives. The idea behind the video is to engage the class in wanting to understand what a launch is all about.  Set up the video with a brief overview:   * The team is composed of four team members, a team leader and a TSP coach. * The team has developed a plan and several alternatives. * The team is now ready to present their planning results to management.   Following the video, you need not delve into the video details. However, pause and illicit some class reaction regarding how the team negotiated their commitment, displaying characteristics of a self-managed team (see slide 4). You will refer to aspects of the video throughout the module. |

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| Slides 5-23 | Slides 5-23 provide an overview of the TSP launch.  The module begins with a summary of how the launch process establishes the conditions for a self-managed team.  Here, you can make the point that a launch leads to the important outcome of a plan that is realistic; one that the team can commit to and a plan that management can support. Also emphasize that this is the first real opportunity for the team, and the team leader, to begin *acting* like a self-managed team.  With slide 6, we return to one of the themes that is repeated throughout the training: the need to *lead by example.* The team leader must model the behavior they want the team to adopt. The launch is the first opportunity for the team leader to model this new style of behavior.  Slide 7 provides a brief overview of the role of the team leader and coach *during* the launch. Later, the module provides additional detail about the team leader and coach roles (following the description of the launch process).  Slide 8 provides a brief overview of launch preparation. The purpose of this slide is to send the message that preparation on the part of the team leader *and* management is required to support a successful launch.  Slide 9 presents an overview of the launch process as a precursor to a walkthrough of each stage of the launch.  Slide 10 addresses meeting #1, *Establish Product and Business Goals.* During this meeting, management not only shares their objectives for the team, but they can also use this opportunity to motivate the team and get team members excited about this new style of working together. Refer back to the *Introduction* module where the point was made that team members desire opportunities to work on interesting and exciting projects. As a result of meeting 1, the team not only understands the business and marketing goals for the project, they also leave the meeting motivated for the work ahead.  Slides 11-13 describe meeting 2, *Establish Team Goals.* Slide 11 addresses how the team develops operational goals based on management goals.  Slides 12 and 13 describe TSP team management roles. The important points to make about the team roles are that defined roles   * provide team members with a sense of belonging to the team * ensure that essential work is not overlooked and that the work is coordinated   Acceptance of a given team management role doesn’t imply that the member must do all of the work associated with that area of responsibility. It simply means that the individual coordinates the work within that area and has the oversight responsibilities associated with the role responsibility area. Team management responsibilities should not take a team member more than one to two hours per week (on average). |

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| Slides 5-23, cont. | Slide 14 summarizes meeting 3, *Produce Development Strategy and Process*.  Begin with an overview of meeting 3, describing it as the meeting where *the work is defined*. What does the team have to do and how will they do it? Then walk through each step of meeting 3 with additional detail.  Talk about what the conceptual design is and how it differs from the high-level design  Next, discuss how the team determines the product-build strategy. Discuss why it is important to list all the products the team must produce in addition to the software product. Make the point that it is true that developers can typically identify their work products and estimate their size (to some extent). However, some work products are always overlooked during initial planning. With meeting 3, the idea is to identify *all* of the work products (as a team) to ensure that they are planned for.  Describe how the work processes are defined for each type of product (or service).  Slide 15 summarizes meeting 4, *Build Overall and Near-Term plans.* Step through the activities listed in the slide. The *TSP Planning Guidelines* are included at the end of the module in the attendee notebook. Explain to the class how the guidelines are used during this meeting.  Slide 16 addresses the case where the team completes meeting 4, only to find that they believe they cannot meet the stated management plans. In this case, the team needs to conduct *what-if* analysis to determine how they *can* meet the management goal(s) if, for example, additional resources can be added to the project.  Slide 17 addresses meeting 5, *Develop the Quality Plan.* Here, you may want to lead in by stating that while the task and schedule plan brings the project in on time, it is the quality plan that brings the project in with high quality. Make the point that teams do not *accidentally* build superior quality products. Quality has to be planned and managed, just as the schedule is planned and managed.  Slide 18 addresses meeting 6, *Build Individual and Consolidated Plans.* During this stage of the launch, team members are allocated specific assignments. Then, they consider those assignments and make adjustments to the estimates based on their assessment of their individual capability. Each process phase of a task is broken down further into specific tasks that are estimated by the individual who will carry out the task. At the end of the individual planning, all team member plans are consolidated into the team plan. This consolidation is described with slide 19. The TSP support tool manages the consolidation.  Slide 20 summarizes meeting 7, *Identify Risks and Mitigation Strategies.* Make the point that it is unlikely that a senior manager would take a plan seriously if the team has not considered risks to the plan. Then step through the slide content.  Slide 21 provides a summary of the products that are generated by the team during the launch. |

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| Slides 5-23, cont. | Slide 22 addresses meeting 8, *Prepare for Management Briefing*. After stepping through the slide, refer to the module, *Reporting to Management,* that will be covered later in the course. In this module, the nuances of presenting TSP data to management will be covered in additional detail.  Slide 23 addresses meeting 9, *Hold Management Review*. You might ask the class to recall the video that they watched at the beginning of the module. Then step through the slide.  Here, also mention that a postmortem meeting is conducted after the launch to assess what worked well during the launch, and what needs to be improved. |

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| Slides 24-28, cont. | This set of slides addresses the roles and responsibilities of the team leader and coach during the launch. The purpose here is to encourage the attendees to think about how they will have to work differently as team leader of a self-managed team.  Again, the team leader must lead by example and the team leader’s behavior during the launch will set the stage for team member expectations.  Some may be initially confused about the relationship of the team lead to the coach and how they work together. Therefore, the coach’s role is emphasized in slide 26—the coach is there to help the team leader with implementing the TSP so that a successful project is realized. Additional detail of the coach’s role is described on slide 27.  With slide 28, the instructor sets up a class discussion. Give the attendees about 10-15 minutes to think about the team leader responsibilities that have been described during the module. Challenge them to identify any behavior changes that will be difficult to adopt.  Suggest that they write down their ideas about how they will overcome those challenges.  Refer to the *Introduction* module where the class discussed and listed leadership behaviors that were considered exemplary by attendees. |

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| C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpgSlide 30 | The TSP Plan: A Guided Tour  Slide 30 sets up an interaction with the class. The purpose of this demonstration is to familiarize the attendees with the types of plans that are created by a TSP team and the type of information that is included in the plan. The TSP plan includes   * overall plan * individual plans(s) * consolidated plan   During the demonstration, step through each section of the plan and describe the information. (A link to the file is provided at the bottom of slide 30).  Note: This example was generated by the Excel TSP tool. Ensure that the class understands that although the output would look different if generated by a different tool (e.g., Process Dashboard, Mirage, etc.), the type of information is the same. |

Process Discipline  
Module 4

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| Slide 2C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpg | This module begins with an exercise titled, *Initial Weekly Meeting.* The purpose of the exercise is to bring emphasis to the importance of following the team’s agreement to collect personal performance data as they conduct their work.  The exercise sets up the the topics that will be discussed in this module.  Break up the class into smaller groups (4-5 per group) for the exercise. Give them approximately 10-15 minutes to complete the exercise before the discussion.  After the exercise, distribute the proposed solution to the exercise and discuss. |

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| Slides 3 | The topics covered in this module include:   * process basics * the importance of process discipline * establishing process discipline   The Rogue Pilot exercise is set up as homework for the class at the end of the module. |

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| Slide 4-28 | Slides 3-28 cover the topic, *Process Basics.* The purpose for this set of slides is to promote a solid and shared understanding of what we mean by the term, *process*, before we introduce the concept of *process discipline*.  Slides 3-7 address this question of “What do you mean by the word, *process*?” Slide 4 poses the question to the class. Write down the definitions that they offer on a flip chart.  Slide 5 provides various referenced definitions of the term, *process*.  Slide 6 illustrates the different levels of how people use the term, *process*.  Side 7 addresses the notion of a *personal process* and how a personal process description helps the team by providing a shared understanding of how the work is accomplished.  With slide 8, an additional interaction is set up to discuss the benefits of a defined process.  Slide 10 is an overview of the TSP process and measurement framework. Briefly discuss it here since the upcoming slides discuss each element in more detail.  Slide 11 is a build slide. (Please practice moving through this slide before the course so that you step through it smoothly.) This slide illustrates the relationship between each element of the process and measurement framework. |

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| Slides 4-28 cont. | Slide 12 describes the elements of a PSP/TSP process script. Step through and explain the purpose of each element of the script.  Slides 14-17 describe the TSP base measures. These were introduced in a previous module and are discussed in more detail here.  Slides 18-20 describe TSP forms and how they provide a consistent way of collecting data. Slide 20 highlights the fact that these forms are embedded in the respective TSP support tool-of-choice.  With Slides 21-22 discuss what is meant by a *TSP standard*. Slide 22 provides an example of a TSP standard.  Slides 23-26 illustrate how the process and measurement framework elements are put together in operational terms.  Slide 27 is a summary slide that emphasizes the value derived from using defined processes.  Slide 28 emphasizes that defined processes are owned by the team and can be changed by the team. The process improvement proposal (PIP) mechanism is a structured way to improve processes. |

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| Slides 29-35 | Slides 29-35 address *the importance of process discipline.*  The section begins with a class discussion around the question, “What is process discipline?” Allow the attendees several minutes to consider their response. As attendees offer their ideas, write them on a flip chart.  Slide 31 provides the TSP context and usage of the term, *process discipline*. The essence of the term, in the TSP context, is that TSP teams follow through with their commitment to perform the work processes with high fidelity—meeting or exceeding the standards that were agreed upon by everyone during the launch.  Slide 32 then poses the question, “Why is process discipline important?” Slides 32-33 provide responses to this question.  Slide 34 poses the question, “Why do some people lack process discipline?” Allow the attendees to consider the question before asking for volunteers who will offer their opinion while you write the responses on the flipchart. You can anticipate responses such as the following:   * It’s not easy. * It’s not natural for some people; have to remind yourself to do it. * It involves deferred gratification, (hard work up front; benefits later). * It doesn’t seem important to management. * The process doesn’t fit people’s skills and preferences.   Slide 35 summarizes the topic by describing appropriate TSP behaviors with respect to process data. It also acknowledges that collecting process data can be difficult at first, because it requires a new habit—in this case, a good habit. |

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| Slides 36-45 | Slides 36-45 address the topic, *establishing process discipline.*  The section begins with a class discussion around the question, “How can you help establish process discipline within the team?” Allow the attendees several minutes to consider their response and write them on a flip chart.  Slides 38-45 provide examples of how a team leader can *lead* by establishing process discipline on the team. Note that on slide 45, a link is provided to the script, WEEK, that is used as a guide for TSP weekly status meetings. This handout is provided in the attendee’s notebook (at the end of the module). |

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| C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpgSlide 47 | Slide 46 introduces the Rogue Pilot exercise. If you are on schedule, this exercise is introduced at the end of *day one* of the course. Set up the exercise, assigning the reading task as homework for the evening. The exercise will be discussed at the beginning of the second day of the course. |

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| C:\Users\mkasunic\Desktop\Video icon.jpgDiscussion:  Rogue Pilot exercise | Day two of the course begins with a debrief of the Rogue Pilot exercise.  Before the discussion begins, show the video, “B-52 Crash at Fairchild.m4v,” that provides examples of Lt Col Holland’s rogue behaviors that culminated in the crash of the B-52. The video sets the stage for the class discussion.  Note: Set up the video before the class begins in the morning so that you can seamlessly transition to it (rather than fumble with locating it and setting up the window for it on the laptop).  After the video, begin the class discussion.  The key points of the case study are:   * Lt Col Holland’s violations of standards were known—by both those that work with him and by his superiors. * His superiors ignored the situation or took minimal action to correct the behavior.   Facilitate the discussion by posing probing questions about Lt Col Holland’s behaviors and the non-reaction of his superiors.  Transition the discussion to the context of TSP process discipline by posing the following questions to the class:   * Have you observed situations like this within your organization where rogue behavior was left unchecked? What were the consequences? * What do you think would happen to your TSP team if undisciplined behavior (i.e. unwillingness to follow the team’s practices) is allowed to continue unchecked? * How would you address a situation where an individual is not adhering to the team’s TSP practices? |

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| C:\Users\mkasunic\Desktop\Video icon.jpgDiscussion:  Rogue Pilot exercise, cont. | Following the discussion, show the video titled, “Aftermath – B52 Crash [10-2012].m4v.”  This video provides closure to the Rogue Pilot exercise. |

Leading the Team  
Module 5

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| Slide 2 | This is a short module that includes two topics:   * Managing knowledge work * Developing team members   This content of this module appropriately follows the previous module that covered process discipline. It addresses actions that the team leader can take to assess team behaviors and to intervene when behavior issues arise. |

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| Slides 3-6 | Slides 3-5 represent a review of key aspects associated with the team leader role. Team performance is, of course, an important responsibility of the team leader.  Slide 6 reviews some key questions that the team leader should consider throughout the project life cycle so that performance or behavior issues can be addressed before they become problems for the team.  Review the document, *Assessing Team Dynamics*, that is included in the attendee’s notebook (at the end of the module). A link is provided on slide 6 for on-screen projection of the document. |

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| Slides 8-16 | Slides 8-16 address the topic, *developing team members.* In this section, the focus is on the responsibilities of the team leader with respect to developing individual team members.  Slide 10 addresses the leadership issues associated with   * the proper use of personal data * evaluating team members * handling poor performers   Slides 11 15 provide details about these same issues.  The module comes to a close with slide 16 where *leading* vs. *managing* is contrasted. Of course, the idea is that the desired behaviors of a TSP team leader are those associated with the “Leaders” column and not the “Managers” column. |

Managing the Plan  
Module 6

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| Slide 2 | This module addresses the topics:   * schedule status indicators * maintaining team commitment   Prior to these topic discussions, a brief introduction is included to set up the module. |

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| Slides 3-6 | Slides 3-6 are intended to introduce the issues associated with project schedule tracking.  Slide 3 echoes the questions that management always wants to know: “Will the team complete the work by the committed schedule date?”  Slide 4 draws emphasis to a quote by Fred Brooks in his book, *A Mythical Man Month:* “… schedules slip, one day at a time.” As you discuss this slide, emphasize that these one-day slips accumulate over time into a week and then into multiple weeks—to the point where the slippage becomes unmanageable. With most management approaches, these one-day schedule slips are undetectable since there are no clear indicators that can offer insight into project status.  Slide 5 emphasizes that a project is dynamic and so planning must keep pace by also being dynamic. The emphasis here is that TSP provides measures and support tools that enable timely insight into schedule status.  Slide 6 refers to the TSP Project Plan Summary as the *dashboard* the team leader (and the team) uses during the project to assess schedule status. This slide sets up the next section which steps through the schedule status indicators. |

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| Slides 7-35 | Slides 7-35 step through the key schedule status indicators that are used in the TSP. They include:   * Earned value status * Effort growth * Task hours * To-date hours for completed tasks * To-date hours for uncompleted tasks * Project end date |

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| Slides 7-35, cont. | Slides 9-21 address the *earned value* status indicator in detail with definitions, explanations, examples, and simple test problems that are worked through with the class.  Slides 9-10 describe what the Earned Value method is and how it is used. Slide 10 provides operational definitions.  Slide 11 is a build slide. This slide is to test attendee understanding of the definitions that were just covered in the previous slide. As you present the slide, ask the attendees to follow you on the screen without glancing at their notebooks.  This table provides guidance for how to conduct the interaction using the slide build. |

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| **Mouse click** | **Instructor Script** |
|  | Begin describing the slide as a simple example of an earned value plan. Describe what is on the screen … that there are four tasks and that the effort for each task is estimated during planning. Point out how the *planned value (PV)* is calculated. |
|  | Once the plan is in place, the work begins and the team member begins to conduct work on Task A. |
| 1 | The team member completes work on Task A and finds that they actually spent 10.5 hours of work on the task instead of the 3 hours that was estimated. |
| 2 | *Red highlights are drawn on Task A row to show the relationship between estimated effort and actual effort.* |
|  | 🡪 Here, ask the class what value was earned on this task. |
| 3 | Explain that even though the team member’s effort was three times the value that was estimated, they still only earn the planned value of the task: 30%. |
| 4 | *Red highlights and arrow of first line disappears.* |
| 5 | This begins another example. For Task 2, the team member worked 1.3 hours so they actually completed earlier than the estimated duration for the task. |
| 6 | *Red highlights are drawn on Task A row to show the relationship between estimated effort and actual effort.* |
|  | 🡪 Here, ask the class what value was earned on this task. |
| 7 | Explain that even though the team member’s effort was overestimated and they completed early, they still earn the planned value for the task:20% |
| 8 | *The remainder of table is filled in.* |

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| Slides 7-35, cont. | Slides 12-13 describe how the EV method can be used to determine schedule status.  Slide 14-15 describe how the EV method can be used to estimate the project completion date.  Slide 16 lists the assumptions of the EV method.  Slides 17-18 provide a simple example using the graphed earned value vs. planned value. After the question, “What is the schedule status?” is posed and responded to, ask the class, “Why is the schedule behind?”. Of course, this is a *trick* question because the graph does not provide enough data to ascertain the root cause of the schedule slippage. Slide 18 provides some *possible* reasons why a team would be behind in the schedule. However, without additional data, one would only be guessing.  Slide 19 is a summary slide emphasizing that data is only meaningful in the presence of process discipline.  Slide 20 is a slide build. Use a single click to move *behind* the game show host. (Game show host slide used simply to inject some levity into the module.) Ask the class the first question on the slide. (They should be able to answer this right away.) Then, tell the class to take a few minutes to come with the answer to the second question. Tell the class it is OK if they need to refer to previous slides but that they shouldn’t look at the next slide yet (since the answer is provided on slide 21).  Slide 21 provides the answer to the problem on slide 20 and wraps up the discussion of the earned value method.  Slides 22-28 address project status indicators that can help the team understand why they may be behind (or ahead) of schedule. Example data is provided to illustrate each of the indicators.  Slide 29 highlights a few of the problems that can cause the data to be misleading or can indicate implementation problems.  Slides 30-34 step through the differences between a TSP plan’s baseline, current, and predicted schedule completion dates. |

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| C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpgSlide 35 | Managing the Plan Exercise. The instructor sets up this 20-minute exercise. The purpose of this exercise is to provide practice with interpreting TSP schedule status data.  The exercise is followed by a debrief of one or more of the groups.  Distribute the proposed solution (handout) to the exercise following the group report-outs. |

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| Slides 36-42 | Slides 36-42 address the topic, *Maintaining team commitment*.  This section begins with a class interaction that is triggered by the question on slide 37:  *What are the actions that a team leader could unwittingly take that could make the tea members lose their sense of ownership and commitment to the plan?*  Transcribe attendee responses to a flipchart. Some examples of what you might see include the following:   * make new commitments for the team without team consensus or planning * make key decisions in “private” without team input * fail to hold the team accountable to the standards the team set in the launch * fail to instill process discipline * ignore actual data   Then, flip to slide 38 that presents effective team leader behaviors that support team member commitment.  Slides 39-42 describe various strategies for the team leader to maintain commitment of the team members. |

Managing Quality  
Module 7

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| Slide 2 | The module begins with a slide that summarizes a variety of problems that have resulted from an inattention to quality. The slide begins with some infamous examples where poor quality led to catastrophic results. It then provides other, more subtle, but still costly and annoying problems resulting from poor quality. |

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| Slide 3 | Slide 3 introduces the topics covered in the module:   * Defining quality * The cost of quality * Defect removal techniques * TSP quality measures * Planning for high quality * Assessing quality during the project * Are defects escaping from your process? * What you can do as team leader   This is a lengthy module. Since there is a lot of slides, keep aware of your timing and avoid spending excessive time on any given slide. In addition to the slide information that that must be covered, there are also five exercises that are introduced in this module. |

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| Slides 4-8C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpg | Slides 4-8 address the topic, *Defining quality.*  The section begins with the group exercise, *Define High Quality.* The purpose of this exercise is to challenge the attendees to consider exactly what *quality* means to them and to their organization. Developing a clear understanding of what high quality means for their products is essential before defining quality goals during a TSP launch.  Instruct the break-out groups to record their results on flip chart paper for presentation to the class.  For this exercise, allocate 25 minutes:   * 10 minutes for group discussion and conclusions * 15 minutes for report-out and discussion |

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| Slides 4-8, cont. | Slide 5 presents two typical definitions for quality. The key difference in the two definitions is perspective. Definition #1 is represents feature-based quality while definition #2 emphasizes product quality as *freedom from deficiencies.*  Slide 6 compares and contrasts the two definitions of quality.  Although the two definitions of quality are both valid, slide 7 makes it clear that within the TSP context, the focus is on the second definition of quality: freedom from deficiencies.  Challenge the class to express why they think the TSP focuses on freedom from deficiencies as the quality focus. After the brief interchange, share the TSP perspective on the topic:  While product functionality is important to the customer, when defects are present in a product, they prevent the functional characteristics to be realized. Therefore, the focus needs to be on defect removal rather than product functionality.  Slide 8 completes this section by presenting a concise definition of what we mean in the TSP when we refer to a *defect.* |

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| Slides 9-18 | Slides 9-18 cover the topic, *the cost of quality.*  You can move through this set of slides rather quickly. A number of graphics are presented to bring home the point that prevention and appraisal techniques are more efficient and less expensive than approaches associated with failure costs.  Slide 10 makes the point that defects *will* be injected into the product throughout the product life cycle. Human beings inject defects. That is one thing we are good at. Given that we know defects are injected, the key is to find and fix them as soon as possible.  Slides 11-13 build the rationale for why it is more effective to find and fix the defects where they occur … rather than addressing defect removal later in the process.  This leads to the TSP approach that is conceptually represented on slide 14. Here, the point is that quality doesn’t just happen—it must be built into the product. The review and inspection stages are ways to build quality into the product.  Slide 15 breaks out the various components that contribute to the cost of quality. Make the point here that software testing is considered to be a failure cost.  This leads to the toaster metaphor presented on slides 16-17. When your process is focused on removing defects beyond the development phases, significant rework results to obtain acceptable product (slide 16). However, with a focus on the process (prevention and appraisal), significant rework is avoided.  Slide 18 brings home the point that appraisal costs (reviews and inspections) are always less expensive (in terms of time and effort) than failure costs (testing and rework due to failure). |

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| Slides 19-37 | Slides 19-37 address the topic, *defect removal techniques.*  The section begins with slide 20 which makes the point that defects *will* be injected into products. Mistakes happen for a variety of reasons: lack of attention, fatigue, multi-tasking, etc.  Based on a significant amount of data collected for TSP teams, we have found that the defect injection rate during coding is rather predictable at about two defects per hour.  Slide 21 is a very simple one-click build. The graphic simply emphasizes that defects will be injected throughout the development cycle.  Slide 22 is a class interaction. Pose the question to the class and write down responses on a flip chart. Then flip to slide 23 which is a proposed list. Compare the coverage to techniques to what the class generated.  Slide 24 describes three key approaches to defect removal: (a) personal reviews, (b) inspections (a.k.a., peer reviews), and (c) testing.  Slides 25-30 address personal reviews and inspections. Personal review principles are covered in slide 25 and the importance of the review checklist is highlighted in slides 26 and 27.  Slide 27 is a build slide. A single click starts and animation. While the animation is running, explain how a checklist is used. That is, only one checklist criterion is covered at a time. Once the product has been checked for the criterion, the reviewer checks it off and then moves on to the next criterion … repeating the same process.  Mention also that when reviewing a large product, it should be broken up into manageable pieces and reviewed in parts. So, the first column of the checklist is used for the first part of the product, the second column for the second part, etc.  Slide 28 addresses additional sound review practices that lead to effective defect removal rates.  Slide 29 outlines the TSP inspection process. Step through the process describing the key aspects of each stage of the process.  Note: A good description of the inspection process can be found in Appendix A of the book, *Introduction to the TSP,* by Watts Humphrey.  Slide 30 describes more about the inspection process and emphasizes the importance of process discipline in executing the process.  Slide 31 addresses the third key defect removal approach that was listed on slide. Make the point that with the TSP, the emphasis is on finding defects before the test phase. Refer to the earlier discussion about appraisal costs vs. failure costs.  Many organizations over-rely on testing to remove defects before a product is released to customers. The point of slide 32 is that this over-reliance is fraught with risk. There is simply no way to test for all of the permutations of how code will execute in a system. |

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| Slides 19-37, cont. | Slide 32 discussion, cont.:  What follows is an excerpt from the book by Watts Humphrey and Jim Over that is intended to help support your explanation of the diagram on slide 32.  The circle represents all of the possible ways in which a complex system could be tested. At the top is the range of possible system workloads or data rates, and to the top left is the particular configuration being tested, such as the number of connected network ports, terminals, files, printers, and the like. The bottom left area, resource contention, concerns the number of things going on at the same time, such as printing while sending a message or handling a device interrupt while doing a calculation. At the bottom are data errors, for example, an excessively long message or an improper data type or value. To the right are operator errors or hardware failures.  As computing systems have grown larger and more complex, and as the users have interconnected more and more application areas such as payroll, sales management, and manufacturing scheduling, the number of possible operating conditions for these systems has grown astronomically.( In Figure 8.3), the shaded area in the middle represents the portion of the system that has been tested and where all the defects have been found and presumably fixed. It is considered the “safe” area because of the unique nature of computer programs: As long as they are used under precisely the conditions that were tested, the programs will always work.  The key question, then, concerns the relative sizes of the circle and the safe area. In the early days of computing, applications were relatively simple and the computing systems were too small and underpowered to do more than one thing at a time. In those days, we could exhaustively test many of our simpler programs and be reasonably sure that they would always run. In such cases, the safe area would cover the complete circle in Figure 8.3. Today, however, as systems have grown larger and more powerful, this is no longer possible.  For example, in a meeting we asked the developers who were creating the Microsoft Windows operating system what percentage of this testing circle they thought could be considered safe. They concluded that it was probably around 1% or less. Although it would be extremely hard to make even an approximate calculation for this figure, the test-coverage percentage for Windows—or any other large and complex system—is probably far smaller than 1%. |

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| Slides 19-37, cont. | This number is so small because a single test can cover only one system configuration, one set of data values, and one combination of operating conditions. Furthermore, a simple calculation shows that there are millions of possible configurations and millions of data values to test for each configuration. There are also many millions of possible normal operating conditions, plus many more millions of ways in which these systems can fail or be misused, and each of these combinations would have to be tested against every system configuration and data value. Only then could the testing be considered exhaustive. If it were even possible to conduct these millions and millions of tests in a reasonable period of time, the costs alone would be prohibitive. For both financial and feasibility considerations, it is impossible to produce large-scale high-quality software products through testing alone.  Humphrey, Watts S.; Over, James W. (2010-12-30). Leadership, Teamwork, and Trust: Building a Competitive Software Capability (SEI Series in Software Engineering) (Kindle Locations 2045-2068). Pearson Education (USA). Kindle Edition.  Slide 33-35 emphasize that *multiple* defect removal phases are required to achieve high quality. Slides 34-35 provide a clear example that demonstrates what can happen when a defect removal stage is omitted from the process.  Slide 36 summarizes the economics of quality highlighting the efficiency and effectiveness of appraisal efforts vs. failure activities. The graph presented on slide 37 reinforces that summary data that was reported on slide 36. |

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| C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpgSlide 38 | Exercise: Examine Previous Quality Problems  The purpose of this exercise is to emphasize the importance of quality in terms of the impact that poor quality has had based on the attendee’s previous experience.  This is a 25 minute exercise (max). Instructions are provided on the slide. |

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| Slides 39-46 | Slides 39-46 step through the quality measures:   * Defect injection rate * Defect removal rate * Defect density * Review rate * Phase yield   Pause after introducing each measure to see if there are any questions about the measure that you just introduced. However, the definitions are straight-forward and do not require a lot of explanation.  Slide 46 is a summary slide of the measures. |

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| Slides 47-52 | Slides 47-52 address the topic, *Planning for quality.*  The module begins with a class interaction that challenges the attendees to identify measures that they track or would track to know whether their defect removal approaches are working.  Slide 49 emphasizes that quality must be planned into the product. What this means is that adequate time must be allocated to appraisal phases.  Slide 50 is a simple one-click build slide that draws attention to the planned times allocated to the appraisal phases in part of a TSP quality plan.  Slide 51 illustrates how *defects injected* and *defects removed* are actually entered into the TSP plan. The estimates are based on historical performance. If the team is new to TSP, they likely do not have historical data to base their estimates. In this case, the TSP provides guidelines that a team can use for making these initial estimates.  The TSP guidelines are provided as a supplement to the materials and are located at the end of the module. Use the link provided on slide 51 to project the document on the screen and familiarize the attendees with the content.  Slide 51 summarizes the section by emphasizing that inattention to quality during development will lead to downstream problems during testing (and beyond). |

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| Slides 53-61 | Slides 53-61 address the topic, *Assessing quality during the project.*  Slide 54 refers back to the Economics of Quality table that was presented earlier in the module, but makes the point that the data was collected *following* the release of products. The question then is “How do you assess your quality status *during* the project?”  Slide 55 shows one way of assessing quality. The team can examine the quality plan to determine wither an appraisal phase has removed the number of defects that were planned for. If not, then why not? In the example on this slide, a red flag should go up given the actual vs. planned defects discovered during the requirements inspection.  Slide 56 plays off of slide 55. Although the data on slide 55 should catch your attention, there is insufficient data to judge whether there is a problem or not.  Continuing the example from slide 56, the point being made on slide 57 is that additional exploratory analysis is sometimes needed to determine root cause of a quality issue. Three variables that could be inspected are size, time-in-phase, and review rate—comparing actuals to the planned values. Additionally, you could confer with the quality manager to determine if anything out of the ordinary occurred with the execution of the requirements inspection process.  Slides 58-61 address the quality profile. As components complete unit test, the quality profile can be used as an indicator of quality. Slide 57 introduces the quality profile. |

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| Slides 53-61, cont. | Slide 59 is a build slide. Four quality profiles are displayed are initially displayed. Each profile is examined in sequence followed by a mouse click. The mouse click reveals a colored border (green = good quality; yellow -= marginal quality; and red = poor quality).  Slide 60 addresses the process quality index (PQI) and slide 61 displays data showing the relationship between the PQI and post-development defects. |

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| C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpgSlide 62 | Exercise: Managing Quality.  The purpose of this exercise is to provide attendees with experience interpreting quality data.  Provide 15 minutes to complete the exercise.  A solution handout is distributed following discussion of the exercise. |

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| Slides 63-67 | Slides 63-67 address the topic, *Are defects escaping from your process?*  This set of slides introduces the capture-recapture method as a way of estimating defects that have escaped from the inspection phase into testing.  Slide 64 describes the capture-recapture method.  Slide 65 is a build slide. The slide illustrates the origin of the method. This table provides guidance for running the animation. |

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| **Mouse click** | **Instructor Script** |
|  | Begin by talking about how the capture-recapture method originated in wildlife biology for an animal population’s size. The method is most useful when it is not practical to count all of the individuals in the population. |
| 1 | A portion of the population is captured. |
| 2 | They are then tagged. |
| 3 | After tagging, they are released back into the lake and enough time is allowed to pass so that the tagged fish become dispersed throughout the lake. |
| 4 | After a sufficient time has elapsed, another sample is fished out of the lake … this is the “recapture.” The number of total fish are counted. |
| 5 | The number of *marked* individuals within the sample is counted. Since the number of marked individuals within this second sample should be proportional to the number of marked individuals in the whole population, an estimate of the total population size can be obtained by dividing the number of marked individuals by the proportion of marked individuals in the second sample. The method is most useful when it is not practical to count all of the individuals in the population. |

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| Slides 63-67, cont. | Slide 65, cont.  After stepping through slide 65, use a flipchart to demonstrate the calculations for the example just shown:  Given:   * 30 fish in a small lake are caught and then tagged. * A few days later, 25 fish are caught in the same lake and five of them have tags.   To determine the total number of fish in the lake:  Slide 66 continues the explanation by illustrating how the same method can be used to estimate total defects in a product.   * The *product* becomes our *lake.* * The *defects* are our *fish.*   Two engineers conduct independent appraisals of the product and record the defects that they find.   * The defects found by the first engineer are the *tagged* defects. * Defects that are found by the second engineer, that were likewise found by the first engineer, represent tagged defects. (Other defects that may have been found by the second engineer are untagged defects.)   The same calculation used for the fish example can be used to calculate remaining defects in the product.  Slide 67 lists the assumptions associated with the method. |

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| C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpgSlides 68-70 | The Capture-Recapture Exercise.  An exercise packet is included in the notebook as explanation for the attendees. However, this exercise is typically conducted as an instructor-led exercise.  Break the class out into several groups (based on class size).  Guide the attendees through the instructions that are part of the exercise packet.  Open the excel spreadsheet labeled, “Inspection Tool for CARD Exercise.xls.”  Note: The instructor should have worked through this exercise prior to course delivery so that this demonstration is carried out smoothly.  Slide 69 simply summarizes the exercise.  Slide 70 displays the results of a Monte Carlo simulation of the exercise that shows the variation associated with the results. One point to make here is that the capture-recapture method is a statistical method and not an exact deterministic approach to determining exactly how many defects are in a product. However, while there is a range of results (as shown on the run chart), many of the values hug the line around 12 (face cards). |

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| Slides 71-79 | Slides 71-80 address the topic, *What you can do as team leader.*  This set of slides focuses on actions that the team leader can take to instill an awareness of and a dedication to quality within the team.  Slides 72-73 focuses on the need for the team to develop a shared understanding of what is meant by quality and *high* *quality* in the context of their work. The team must understand that they can only manage quality with data. Process discipline and collecting high-integrity data is essential to managing quality.  Slides 74 addresses situations where a developer displays resistance to defect tracking. Appropriate interventions to this situation are suggested.  Slides 75-79 step through an array of actions that a team leader can and must take to instill quality as the #1 priority for the team. Working with the coach, the quality manager, and the process manager, specific actions must be taken to ensure that quality is being managed throughout the project life cycle. |

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| C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpgSlides 80 | Exercise: Setting Quality Goals.  The purpose of this exercise is to prepare the team leader and management for meeting 1 of the TSP launch.  Break the class out into groups. Each group discusses the questions posed on slide 80 and prepares responses on flip chart. Each group should be prepared to present their results to the class. |

Reporting to Management  
Module 8

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| Slide 2 | This module addresses the topics:   * The management role * Status reporting guidelines * Are you the manager of a TSP team?   The first two topics are addressed to the team leader role. Quite often, upper management (that is, management that team leaders report to) are attendees in this course. Therefore, the third topic is addressed to them (although a team leader can also benefit from this information). |

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| Slide 3 | Slide 3 addresses the management role. Here, when we speak of *management*, we are referring to the management level that a TSP team reports to.  This is the only slide that addresses this topic. |

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| Slides 4-22 | Slides 4-22 address the topic, *Status reporting guidelines.*  Slides 4-6 provide recommendations for how to package the status information for management. Two key points are made: (1) Use *data* to report your status;  (2) package the data so that it is easy for management to process and understand.  Slides 8-22 provide guidance for the content and organization of a status report for management. This set of slides is organized into the following subtopics:   * Report summary * Current status * Completion projections * Recovery plan (if needed) * Quality indicators * Next steps   Slide 9 emphasizes that it is important to summarize the key issues at the beginning of the presentation (not at the end).  Slides 10-12 provide some general guidance for reporting status and slide 13 provides examples for illustration.  Slides 14-18 step through graphical measures that provide status.  Slide 19 emphasizes that in the case where the team is behind in their schedule, a recovery plan must always be presented. Slide 20 provides a simple example to illustrate the point. |

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| Slides 4-22, cont. | As components are completed during the project, the report should include updates that report the quality status. Slide 21 illustrates this point with an example.  Slide 22 recommends ways to conclude the report. After covering the content of the slide, open the, document, *TSP Project Status Report - Specification STATUS,* by clicking on the link provided at the bottom of the page. This document is also provided in the attendee’s notebook. It is not necessary to step through the document in detail. The purpose is to simply show the attendees that a number of support references (such as this) are provided as part of the TSP package. |

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| Slides 23-34 | Slides 23-33 address the topic, Are you the manager of a TSP team?  The primary audience for this set of slides is managers that TSP teams report to. (Upper level managers are frequently a secondary audience of the course.)  The intention of slide 24 is to encourage management to set reasonable expectations for a newly formed TSP team.  Slide 25 addresses the case where management might be tempted to take the best performance ever achieved by a project (from their memory, but not necessarily a case based on actual data) and use this project as the standard by which a newly-formed TSP team will be judged. The slide content is intended to encourage base comparisons and the decision-making process on data.  TSP, unlike so many other methodologies, emphasizes the use of data for decision-making, Slides 26-29 emphasize the appropriate use of data by management and appropriate interpretation and response to data.  Slides 30-34 illustrate ways that management can help TSP teams be successful and for TSP itself to become ingrained in the organization. |

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| C:\Users\mkasunic\Desktop\iStock_000022491726XSmall.jpgSlides 35 | Exercise: Reporting to Management  The purpose of the exercise is to provide practice with interpreting TSP project data.  Open the exercise and orient the class to the scenario that is described.  This exercise is a *challenge exercise*. Encourage attendees to ask for help if they have questions.  After completion of the group report-outs, distribute the proposed solution (handout).  Note: The instructor should work through the details of this exercise prior to delivery of the course. |

Getting Better At It  
Module 9

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| Slide 2 | This module addresses the topics   * Checkpoint review * Cycle and project postmortems * Process improvement proposals (PIPs)   This is a rather brief module that is intended to ensure that the team leader is aware of key events that occur during a TSP cycle after a team launch (since they were only alluded to elsewhere in the course). The checkpoint review and postmortem are featured in the upcoming *Capstone exercise.* |

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| Slides 4-6 | Slides 4-6 address the topic, *Checkpoint review*.  Slides 4-5 describe the checkpoint review. A point to be made during presentation of these slides is that the checkpoint is most certainly *not* an audit. It is an intervention that is made to ensure the team is on track. A checkpoint is especially important for a new team. As a team becomes more experienced with the TSP, the need for a checkpoint review diminishes.  Slide 6 emphasizes that an action plan must be developed to address any findings associated with a checkpoint review. |

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| Slides 7-14 | Slides 7-14 address the topic, *Cycle and project postmortem*.  Slide 8 describes what a postmortem is in general terms, and then lists and describes the different ways that the term, *postmortem*, is used in the TSP.   1. postmortems conducted at the personal level (e.g., the postmortem at the end of a PSP cycle) 2. launch and re-launch postmortems 3. cycle and project postmortems   Slides 9 and 10 present graphics that provide the context that we are addressing in this module, the cycle and project postmortems.  Slide 11 describes how the postmortem is conducted.  Slides 12-13 list the questions that are asked at the time of a postmortem and the measures (both base and derived) that answer those questions. |

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| Slides 14 | Slide 14 illustrates how postmortem data is cycled back through the TSP planning framework so that planning estimates for the next cycle, or the next project, are improved. |

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| Slides 15-17 | Slides 15-17 address the topic, *Process improvement proposals (PIPs).*  Slide 16 emphasizes that process improvement is the cornerstone of TSP. The process improvement proposal mechanism is how improvement suggestions are systematically submitted, analyzed and approved before being implemented.  A point to make is that a PIP should be submitted anytime during the project—not just during the postmortem.  Team leaders should always encourage team members to submit a PIP when a process-related problem surfaces.  Slide 17 brings this topic to a conclusion by noting that process improvement is continuous—it doesn’t stop. That is why process improvement is typically referred to as *continuous process improvement* and represented by a circular cycle. To keep pace with changing technology, innovation, and the competition in the marketplace, successful organizations must constantly improve—just to stay viable. The Watts Humphrey quote emphasizes the point that process improvement and quality must be every team member’s business. |

Capstone Exercise  
Module 10

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| Description | The capstone exercise is intended to present team leaders with situations that they may face when leading a TSP team.  The capstone exercise presents an eight-part scenario. It provides an opportunity for the attendees to analyze situations in light of the concepts and skills that they have learned during the course. The exercise also provides an enriching opportunity for attendees to learn from their peers as they collaborate to arrive at group decisions during each part of the exercise.  The scenario begins with a situation where an individual has just been requested by management to become the lead of a team that has not been performing well. The remaining seven parts of the exercise continue the scenario through various situations in the team’s adoption of TSP, including training, launching, and performing up through completion of the project.  Break the class into small groups. Provide time for the groups to read one part of the scenario and then to discuss it as a group to arrive at responses to the questions that are posed (for that part of the scenario). Then pick one of the groups and ask them to share their conclusions with the class. When they have completed their presentation, as the other groups if they have anything to add or if they came to a different conclusion.  There is a handout of proposed solutions to each part of the exercise. However, wait until the exercise completes before distributing it to the attendees. You (the instructor), can use this handout as a guide to add any points that you believe should be highlighted (if the point was not already raised by one of the groups).  When you move on to the next part of the scenario, repeat the process that is described above, but select a different group to share their conclusions with the class.  For small classes, this exercise can be done as a class discussion. Give the attendees time to read the scenario and answer the questions as individuals. Then discuss their answers with the class. With this approach the instructor must facilitate the class in such a way that every attendee is engaged in the discussions throughout the exercise. |

Conclusion  
Module 11

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| Slide 2 | Slide 2 is a summary slide to bring the course to a conclusion. |

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| Slides 3-4 | Slides 3-4 provide additional learning references. |

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| Slides 5 | This slide prompts the distribution of the course evaluations.  Express that you would appreciate obtaining any feedback about the course. |

Appendix A. Course Agenda

Day One Schedule

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| **Time** |  | **Topic** |
|  |  |  |
| 8:00 - 8:30 |  | Continental Breakfast |
|  |  |  |
| 8:30 - 9:15 |  | Introduction |
| 9:15 - 10:30 |  | The Team Leader Role |
|  |  |  |
| 10:30 - 10:45 |  | Break |
|  |  |  |
| 10:45 - 12:15 |  | TSP Overview |
|  |  |  |
| 12:15 - 1:15 |  | Lunch |
|  |  |  |
| 1:15 - 2:45 |  | Team Launch  TSP Plan: A Guided Tour |
|  |  |  |
| 2:45 - 3:00 |  | Break |
|  |  |  |
| 3:00 - 3:15 |  | Exercise. Initial Weekly Meeting Exercise |
| 3:15 - 4:45 |  | Process Discipline |
| 4:45 - 5:00 |  | Exercise. Rogue Pilot Case Study |
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Day Two Schedule

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| --- | --- | --- |
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| **Time** |  | **Topic** |
|  |  |  |
| 8:00 - 8:30 |  | Continental Breakfast |
|  |  |  |
| 8:30 - 9:00 |  | Exercise. Rogue Pilot Case Study, Debrief |
| 9:00 - 9:45 |  | Leading the Team |
| 9:45 - 10:15 |  | Managing the Plan |
|  |  |  |
| 10:15 - 10:30 |  | Break |
|  |  |  |
| 10:30 - 11:15 |  | Managing the Plan, continued |
| 11:15 - 12:15 |  | Exercise. Managing the Plan |
|  |  |  |
| 12:15 - 1:15 |  | Lunch |
|  |  |  |
| 1:15 - 1:30 |  | Managing the Plan, continued |
| 1:30 - 2:00 |  | Managing Quality |
|  |  |  |
| 2:00 – 2:15 |  | Break |
|  |  |  |
| 2:15 - 5:00 |  | Managing Quality, continued |
|  |  |  |

Day Two Schedule

|  |  |  |
| --- | --- | --- |
|  |  |  |
| **Time** |  | **Topic** |
|  |  |  |
| 8:00 - 8:30 |  | Continental Breakfast |
|  |  |  |
| 8:30 - 9:00 |  | Managing Quality, continued |
| 9:00 - 10:00 |  | Reporting to Management |
|  |  |  |
| 10:00 - 10:15 |  | Break |
|  |  |  |
| 10:15 - 11:15 |  | Exercise. Reporting to Management |
| 11:15 - 11:45 |  | Getting Better At It |
|  |  |  |
| 11:45 - 12:45 |  | Lunch |
|  |  |  |
| 12:45 - 2:15 |  | Capstone Exercise |
|  |  |  |
| 2:15 - 2:30 |  | Break |
|  |  |  |
| 2:30 - 3:15 |  | Capstone Exercise, continued |
| 3:15 - 3:45 |  | Course Conclusion and Evaluation |
|  |  |  |
| 3:45 |  | Adjourn |
|  |  |  |

Appendix B. Events Conducted During the Course

|  |  |  |  | **Event (exercise, interaction, video, or evaluation)** | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Mod. #** | **Module** | **# of slides** | **Topics** | **Event type** | **Event Slide #** | **Description** |
| 0 | Introduction | 11 | * Introductions * Logistics and guidelines * Agenda review | Interaction | 5 | Attendees list and discuss problems that they or their customer have had using their software products. |
| 1 | Team Leader Role | 19 | * The team leader’s challenge * Knowledge work * Leadership * Motivating teams | Interaction | 12 | Leadership discussion; Attendees identify characteristics of effective leaders they have known. |
| 2 | TSP Overview | 41 | * Self-managed teams * Defined process framework * Team-based project planning process guided by a coach * Metrics for tracking project status and product quality * TSP measurable benefits | Video & discussion | 3 | A peek into a TSP team’s weekly meeting followed by a discussion of how the attendees’ project(s) are similar or different. |
| 3 | Team Launch | 31 | * TSP launch overview * Roles & responsibilities of team leader and coach | Video & discussion | 3 | A peek into meeting 9 of a TSP launch. The video is followed by a facilitated discussion. |
| 4 | Process Discipline | 50 | * Process basics * The importance of process discipline * Rogue pilot exercise | Exercise (Handout) | 48 | Rogue pilot case study. |
| 5 | Leading the Team | 18 | * Managing knowledge work * Developing team members | None | - | - |
| 6 | Managing the Plan | 44 | * Using the Earned Value method to manage the project * Determining project status * Maintaining team commitment | Interaction | 11 | Instructor steps through a simple earned value example to test attendee understanding of what planned and earned value are. |
| Interaction | 20-21 | Instructor presents a simple earned value status problem for the attendees to figure out. |
| Exercise (Handout) | 35 | Managing the Plan |
| 7 | Managing Quality | 85 | * Defining quality * The cost of quality * Defect removal techniques * TSP quality measures * Planning for high quality * Assessing quality during the project * Are defects escaping from your process? * What you can do as team leader | Exercise | 4 | Define High Quality; Attendees break into groups and define what quality means with respect to the products or services they deliver. |
| Exercise | 38 | Examine Previous Quality Problems; Class breaks into groups and identifies problems that their team has delivered to customers in the past, along with an estimate of what it took cost-wise to fix the problem(s). |
| Exercise (Handout) | 62 | **Managing Quality** |
| Exercise  (Handout) | 69 | Capture-Recapture. An instructor-led exercise that simulates an inspection using a deck of cards. Escaped defects are estimated using the capture-recapture method. |
| Exercise | 80 | Setting Quality Goals; Class breaks into groups and responds to questions that are posed on the slide that are directed at setting expectations with the team about quality and how to measure success. |
| 8 | Reporting to Management | 35 | * The management role * Status reporting guidelines * Are you the manager of a TSP team? | Exercise (Handout) | 35 | Reporting to Management. Class breaks out into groups to work together to address the exercise scenario. The scenario is that the planning manager has prepared a status report presentation for management. The objective is to critique the draft report and respond to the posed questions of the exercise. |
| 9 | Getting Better At It | 16 | * Checkpoint review * Cycle and project postmortem * Process improvement proposals (PIPs) | None | - | - |
| 10 | Capstone Exercise | - | - | Exercise (Handout) | - | Eight-part culminating exercise. |
| 11 | Conclusion | 7 | Course conclusion and evaluation | Evaluation | - | Attendees complete course evaluations. |

Appendix C. Course Folder Structure

|  |  |  |  |
| --- | --- | --- | --- |
| **Top Folder or document** | **2nd Level Subfolder or document** | **3rd Level Subfolder or document** | **Document** |
| Collateral | TL Course Checklist.docx |  |  |
| TL Facilities Specification.docx |
| TL Notebook & Handout Instructions.docx |
| TL Precourse Letter.docx |
| TL Supply List.docx |
| Course Notebook | Cover and Spines | Cover Page.pptx |  |
| Spine Bndr.pptx |
| Notebook Contents | Contents | Contents.docx |
| M0. Introduction | Introduction.pptx |
| M1. Team Leader | L01. TSP Team Leader.pptx |
| M2. TSP Overview | L02. TSP Overview.pptx |
| TL Role Spec.docx |
| M3. TSP Launch | L03. Team Launch.pptx |
| Guideline TSP Planning.docx |
| TSP Plan – A Guided Tour.docx |
| M4. Process Discipline | L04. Process Discipline.pptx |
| EX4A -Initial Weekly Meeting.docx |
| EX4B - Rogue Pilot.docx |
| Darker Shades of Blue.pdf |
| Script WEEK.docx |
| M5. Leading the Team | L05. Leading the Team |

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| --- | --- | --- | --- |
| **Top Folder or document** | **Subfolder or documents** | **Subfolder or document** | **Document** |
| Course Notebook [cont.] | Notebook Contents [cont.] | M6. Managing the Plan | L06. Managing the Plan.pptx |
| EX6 - Managing the Plan.docx |
| M7. Managing Quality | L07. Managing Quality.pptx |
| Ex7a -CaptureRecapture.docx |
| EX7b - Managing Quality.docx |
| Guideline TSP Quality Plan.docx |
| Inspection Tool for CARD Exercise.xls |
| M8. Reporting to Management | L08. Reporting to Management.pptx |
| EX8 - Reporting to Mgmt.docx |
| STATUS.docx |
| M9. Getting Better At It | L09. Getting Better At It.pptx |
| M10. Capstone | EX10 - Capstone.docx |
| M11. Conclusion | L11. Conclusion.pptx |
| Tabs | 1tab Contents and Schedule.docx |  |
| 2tab Course Introduction.docx |
| 3tab Team Leader.docx |
| 4tab TSP Overview.docx |
| 5tab TSP Launch.docx |
| 6tab Process Discipline.docx |
| 7tab Leading the Team.docx |
| 8tab Managing the Plan.docx |
| 9tab Managing Quality.docx |
| 10tab Reporting to Management.docx |
| 11tab.Getting Better At It.docx |
| 12tab Capstone.docx |
| 13tab Course Conclusion.docx |

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| --- | --- | --- | --- |
| **Top Folder or document** | **Subfolder or documents** | **Subfolder or document** | **Document** |
| Handouts | EX4A Initial Weekly Meeting - Answer.docx |  |  |
| EX5 Managing the Plan - Answer.docx |
| EX6 Managing Quality - Answer.docx |
| EX7 Reporting to Mgmt - Answer.docx |
| Ex9 Capstone - Answer.docx |
| Instructor Materials | Instructor Guide.docx |
| Release Notes.docx |  |  |  |
| TL - Folder Structure.docx |

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